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SDMS Document



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March 9, 2001

Via e-mail

Mr. Peter Mannino
Project Manager
United States Environmental Protection Agency, Region 2
290 Broadway, 19th Floor
New York, New York 10007

Re: Cornell-Dubilier Electronics Superfund Site/Hamilton Industrial Park
Pathways Analysis Report

Dear Mr. Mannino:

As we discussed, in anticipation of the formation of a "risk assessment working group" for the above-referenced site, the Hamilton Industrial Park Group (HIPG) has reviewed the *Pathways Analysis Report for Remedial Investigation/Feasibility Study* ("PAR", May 2000) prepared by Foster Wheeler Environmental Corporation for USEPA. The primary focus of this review was to gain an understanding of the proposed scope and approach to be employed to assess risks associated with on-site soils under current and future conditions. In particular, since USEPA has agreed to incorporate HIPG's redevelopment plan as one of the future scenarios to be evaluated, we felt it was important to identify any potential inconsistencies with the methodologies we have employed on other similar projects. As we discussed, these comments were prepared assuming that the first task of the Working Group will be to review the detailed scope of work and methodology, and resolve any potential technical concerns before work begins on the risk assessment.

I have enclosed a summary of the HIPG's comments on the PAR for your consideration. Once you have reviewed these comments, we would appreciate the opportunity to discuss the upcoming risk assessment task with you – perhaps as the kick-off meeting for the Working Group.

Please call me at (609) 243-9859 if you should have any questions or comments regarding the enclosed comments. I look forward to hearing from you to initiate the working group process.

Sincerely,
On behalf the Hamilton Industrial Park Group

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J. Mark Nielsen, P.E.
Manager

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Enclosure

**Preliminary Comments on the
Pathways Analysis Report for
Remedial Investigation/Feasibility Study
Cornell-Dubilier Electronics Superfund Site,
South Plainfield, Middlesex County, New Jersey**

1. Current vs. Future Risks

Because of potential community concerns regarding current site conditions, the Pathways Analysis Report (PAR) should make a clear distinction between the estimation of baseline risks under the current site conditions, and those under potential future land use scenarios, since current and future soil exposure conditions will be different (e.g., Table 2 identifies exposure to on-site surface soil as a "future" scenario only).

2. Congener-Specific Analysis

It is not clear that USEPA guidance requires the collection of congener-specific analysis and what benefit this provides, particularly for the soil samples where potential exposures do not involve indirect pathways. Further, this approach appears to be inconsistent with USEPA's development of the water quality criteria for total PCBs, in which USEPA chose a cancer potency factor that is representative of the more highly chlorinated, more toxic and persistent congeners (USEPA. Office of Water. 1999. National Recommended Water Quality Criteria-Correction. EPA 822-Z-99-001). Therefore, calculation of risks associated with PCBs in on-site soils should be based on the total PCB concentration.

3. Exposure Factors

The exposure factors to be used in assessing potential current and future risks should accurately define the risks without overstating them. In some cases the exposure factors presented in the PAR appear to be overly conservative or inconsistently applied for different receptor populations. For example:

- According to USEPA's *Risk Assessment Guidance for Superfund (Part A)* (RAGS), the dose equation should include a parameter for "fraction ingested from contaminated source."
 - The soil ingestion rate for each receptor should be adjusted for the exposure time. For example, if a soil ingestion rate of 200 mg/day is used for the trespasser, and the trespasser is assumed to be exposed to contaminants in soil for two hours per day, then the final soil ingestion rate would be 25 mg/day (i.e., 200 mg/day x 2 hours/16 waking hours per day).
 - The dose equation for fish ingestion should include a parameter for "fraction ingested from contaminated source." Note that it is unlikely that 100% of the ingested fish come from the area of concern.
- The soil ingestion rate for the construction worker is overly conservative based on current guidance. The basis for USEPA's recommendation of 480 mg/day has been superseded by newer dermal contact data addressing hand to mouth transfer (USEPA.

Office of Research and Development. 1997. *Exposure Factors Handbook*. August. EPA/600/P-95/002Fa. Pages 4-21 and 6-6). A soil ingestion rate of 100 to 200 mg/day is consistent with current information and risk assessment methodology.

- The assumed dermal absorption of 14% for PCBs is high for absorption from soil. USEPA's 1992 Dermal Exposure Assessment Guidance recommends a value of 6% for PCBs.
- The exposure frequency for the trespasser, youth park recreator, and adult park recreator is based on year-round exposure, and does not account for winter months (it is assumed that these receptors are exposed for 110 days per year, based on two days per week per year). The exposure frequency should be adjusted to reflect winter months and time spent away from home on vacation, similar to the approach presented for the young child recreator.
- The exposure time assumed for each receptor should be consistent for each route of exposure. The description for the trespasser, park recreators, and off-site residents indicates that the soil ingestion rate is based on "no more than a ½ day" while the inhalation rate is based on 1 to 2 hours per day. For consistency, the soil ingestion rate should also be based on 1 to 2 hours per day.
- An explanation is necessary for assuming a 10 hour work day and 180 days per year for the construction worker. The inhalation rate for the construction worker is high. It is unlikely that a worker will maintain an inhalation rate of 3.3 m³/hour for 10 hours a day. A 3.3 m³/hour inhalation rate corresponds to a daily inhalation rate higher than the 20 m³/day indicated in the text. According to USEPA's 1991 *Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"* document, 20 m³/per 8-hour workday is a reasonable upper-bound inhalation rate for the occupational setting.
- A consistent approach should be employed for adjusting reasonable maximum exposure (RME) values for the central tendency (CT) assessment. For example, the RME value for the construction worker soil ingestion rate was used for the central tendency value, when one-half the RME value was used for the young child recreator CT soil ingestion rate.

4. Selection of Chemicals of Concern

- Recent USEPA guidance recommends not using frequency of detection screen or toxicity screening before conducting the risk assessment. If such screening is used, Region IX risk-based values should be used. Region IX risk based values which have been capped based on non-risk based parameters (e.g., saturation) should not be used for the screen.
- The statistical approach suggested for comparison of on-site samples with background

samples which involves using 2 times the mean detected background concentration is not a valid statistical method. On-site samples should be compared with the 99% upper prediction limit for off-site samples instead (USEPA. Office of Emergency and Remedial Response. *Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A) Interim Final*. December. EPA/540/1-89/002. Page 4-8).

5. Exposure Assessment

- The PAR should explain how vapor emissions from soil will be modeled and air dispersion rates will be calculated.
- The PAR should explain how exposure to drinking water will be evaluated, i.e., tap water measurements vs. modeling, for both current and future use scenarios.
- The proposed approach for calculating exposure concentrations based on USEPA guidance in RAGS and *Calculating the Concentration Term* will likely give artificially high 95% UCLs. More recent USEPA guidance recommends use of the "bootstrap" method to calculate exposure point concentrations. (USEPA. Office of Research and Development. *The Lognormal Distribution in Environmental Applications*. December. EPA/600/R-97/006.)

6. Risk Characterization

- MCLs should be used in the risk assessment for assessing residential use of drinking water, rather than calculating the risk from drinking water; use of the MCLs is consistent with the specifications of the NCP.
- The risk characterization step should clarify that, based on the choice of exposure factors, the receptors are separate groups.
- The PAR should be modified to specify that hazard indices (HIs) cannot be summed across age groups or receptors.
- The PAR should allow for quantitative uncertainty analysis in addition to the qualitative evaluation specified in Section 7 of the PAR. For example, Monte Carlo simulations could be performed to assess the uncertainty associated with the point risk estimates.

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Pietro Mannino

03/09/01 10:40 AM

To: mnielsen@environcorp.com

cc:

Subject: Cornell-Dubilier Electronics Site

Mark;

The following is the Agency's response to your comments on the Pathways Analysis Report for the Remedial Investigation/Feasibility Study at the Cornell-Dubilier Electronics Superfund site, located in South Plainfield, New Jersey. In addition, as soon as I have some tentative dates for a meeting, I will forward them to you. Please feel free to call me at 212-637-4395 if you have any additional comments or questions.

1. Current vs. Future Risks

COMMENT: Because of potential community concerns regarding current site conditions, the Pathways Analysis Report (PAR) should make a clear distinction between the estimation of baseline risks under the current site conditions, and those under potential future land use scenarios, since current and future soil exposure conditions will be different (e.g., Table 2 identifies exposure to on-site surface soil as a "future" scenario only).

RESPONSE: In the risk assessment, appropriate modifications to the Tables to clearly define, current, current/future, and future exposure scenarios will be included in the risk assessment.

2. Congener-Specific Analysis

COMMENT: It is not clear that USEPA guidance requires the collection of congener-specific analysis and what benefit this provides, particularly for the soil samples where potential exposures do not involve indirect pathways. Further, this approach appears to be inconsistent with USEPA's development of the water quality criteria for total PCBs, in which USEPA chose a cancer potency factor that is representative of the more highly chlorinated, more toxic and persistent congeners (USEPA. Office of Water. 1999. National Recommended Water Quality Criteria-Correction. EPA 822-Z-99-001). Therefore, calculation of risks associated with PCBs in on-site soils should be based on the total PCB concentration.

RESPONSE: The 1996 Cancer Reassessment for PCBs document titled "PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures" on pages 63 to 65 indicates a contribution to risk from the dioxin - TEQ and the non-dioxin-like PCBs. Based on this information, and discussion with the Office of Emergency and Remedial Response, the risk assessment will evaluate dioxin-TEQs and non-dioxin-like PCBs in the assessment and include a discussion of the relative contribution from each. At this time, we do not plan to combine the risks, but this decision may change if additional guidance is provided in the future.

3. Exposure Factors

COMMENT: The exposure factors to be used in assessing potential current and future risks should accurately define the risks without overstating them. In some cases the exposure factors presented in the PAR appear to be overly conservative or inconsistently applied for

different receptor populations. For example:

According to USEPA's *Risk Assessment Guidance for Superfund (Part A)* (RAGS), the dose equation should include a parameter for "fraction ingested from contaminated source."

-The soil ingestion rate for each receptor should be adjusted for the exposure time. For example, if a soil ingestion rate of 200 mg/day is used for the trespasser, and the trespasser is assumed to be exposed to contaminants in soil for two hours per day, then the final soil ingestion rate would be 25 mg/day (i.e., 200 mg/day x 2 hours/16 waking hours per day).

-The dose equation for fish ingestion should include a parameter for "fraction ingested from contaminated source." Note that it is unlikely that 100% of the ingested fish come from the area of concern.

RESPONSE: Consistent with the NCP, the risk assessment will evaluate exposures to the Reasonably Maximally Exposed Individual and Central Tendency Individuals. These exposures represent the 90th percentile or above for the RME and the 50th percentile for the average exposure.

Regarding the soil ingestion rate, EPA uses the data from the Calabrese study to support the determination of the amount of soil ingested per day i.e., 200 mg/day. Review of the data from this study does not indicate whether the exposure happened over 5 minutes or 5 hours making it difficult to determine whether the straight apportionment of the hours as suggested in the comment is appropriate. In addition, the activities envisioned during plan i.e., sandbox activities, running into home plate, etc. would suggest that the individual may receive their highest daily soil exposures at this time. Therefore, unless site-specific information can be presented, the ingestion rates currently listed in the document will be used in the calculations.

COMMENT: The soil ingestion rate for the construction worker is overly conservative based on current guidance. The basis for USEPA's recommendation of 480 mg/day has been superseded by newer dermal contact data addressing hand to mouth transfer (USEPA. Office of Research and Development. 1997. *Exposure Factors Handbook*. August. EPA/600/P-95/002Fa. Pages 4-21 and 6-6). A soil ingestion rate of 100 to 200 mg/day is consistent with current information and risk assessment methodology.

RESPONSE: The Office of Emergency and Remedial Response has looked at the issue of 1991 soil ingestion rate for the adult construction worker and has determined that adequate data is not available for the other parameters included in this calculation to change the current value from 480 mg/day to 100 to 200 mg/day as suggested in the comment. Therefore, we will continue to use the 480 mg/day value for the construction scenario.

COMMENT: The assumed dermal absorption of 14% for PCBs is high for absorption from soil. USEPA's 1992 Dermal Exposure Assessment Guidance recommends a value of 6% for PCBs.

RESPONSE: The 14% dermal absorption value from soil is consistent with the

recommendations in the 1996 "PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures" document where specific recommendations for linking this dermal absorption value with the cancer slope factor are provided (see pages 22-23, and page 44). Therefore, the 14% dermal absorption value based on the Wester et al., 1993 study will be used in the calculation. In addition, this is the anticipated value that will be recommended in the new Dermal Guidance currently being finalized.

COMMENT: The exposure frequency for the trespasser, youth park recreator, and adult park recreator is based on year-round exposure, and does not account for winter months (it is assumed that these receptors are exposed for 110 days per year, based on two days per week per year). The exposure frequency should be adjusted to reflect winter months and time spent away from home on vacation, similar to the approach presented for the young child recreator.

RESPONSE: The statement regarding the exposure frequency for the trespasser, youth park recreator, and adult park recreator will be modified to indicate that higher exposure occurs during the spring, summer and fall months resulting in a total exposure period of 110 days. The revised assumptions are: 4 days/week during the 14 weeks of summer for a total of 58 days; 2 days/week for 16 weeks of April, May, September and October for a total of 32 days; 1 day/week for the remaining 20 weeks, for a total of 20 days. The assumption that individuals will be exposed during the winter months is not inappropriate since people may walk their dogs within the park areas, or participate in other winter activities.

COMMENT: The exposure time assumed for each receptor should be consistent for each route of exposure. The description for the trespasser, park recreators, and off-site residents indicates that the soil ingestion rate is based on "no more than a 1/2 day" while the inhalation rate is based on 1 to 2 hours per day. For consistency, the soil ingestion rate should also be based on 1 to 2 hours per day.

RESPONSE: As stated earlier, regarding the soil ingestion rate, EPA uses the data from the Calabrese study to support the determination of the amount of soil ingested per day i.e., 200 mg/day. Review of the data from this study does not indicate whether the exposure happened over 5 minutes or 5 hours making it difficult to determine whether the straight apportionment of the hours as suggested in the comment is appropriate. In addition, the activities envisioned during plan i.e., sandbox activities, running into home plate, etc. would suggest that the individual may receive their highest daily soil exposures at this time. Therefore, unless site-specific information can be presented, the ingestion rates currently listed in the document will be used in the calculations. The text in the final tables will indicate that the soil ingestion is event based and not based on the number of hours.

COMMENT: An explanation is necessary for assuming a 10 hour work day and 180 days per year for the construction worker. The inhalation rate for the construction worker is high. It is unlikely that a worker will maintain an inhalation rate of 3.3 m³/hour for 10 hours a day. A 3.3 m³/hour inhalation rate corresponds to a daily inhalation rate higher

than the 20 m³/day indicated in the text. According to USEPA's 1991 *Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"* document, 20 m³/ per 8-hour workday is a reasonable upper-bound inhalation rate for the occupational setting.

RESPONSE: As stated on page 6 of the Standard Default Exposure Factors Evaluation Manual, Supplement Guidance, the inhalation rate of 20 cubic meters/day "... focused on the following population subgroups who would be expected to spend the majority of their time at home: housewives; service and household workers; retired people, and unemployed workers (USEPA, 1985). An inhalation rate of 20 cubic meters/day was found to represent a reasonable upper bound value for adults in these groups". The selection of 3.3 cubic meters/hour for heavy activities such as construction is consistent with the information provided in the Exposure Factors Handbook, Chapter 5, page 5- 22.

COMMENT: A consistent approach should be employed for adjusting reasonable maximum exposure (RME) values for the central tendency (CT) assessment. For example, the RME value for the construction worker soil ingestion rate was used for the central tendency value, when one-half the RME value was used for the young child recreator CT soil ingestion rate.

RESPONSE: Discussions with the Office of Emergency and Remedial Response indicate that adequate information is not available to change the CT values for ingestion of soil by the construction worker. Therefore, this assumption should be used in the CT evaluation.

4. Selection of Chemicals of Concern

COMMENT: Recent USEPA guidance recommends not using frequency of detection screen or toxicity screening before conducting the risk assessment. If such screening is used, Region IX risk-based values should be used. Region IX risk based values which have been capped based on non-risk based parameters (e.g., saturation) should not be used for the screen.

RESPONSE: The Risk Assessment Guidance for Superfund and other appropriate guidance still recommends using the frequency of detection and an evaluation of the carcinogenic potential of the chemical in the screening of chemicals of concern. The recommendation in the Soil Screening Level Guidance is to use the risk based concentration as an additional screen and this will be done in the risk assessment. It is unclear from the statement how the chemicals with the cap will be used in the screening, does this mean that all chemicals with saturation cap information are to be maintained in the risk assessment?. Currently, the saturation information is used in the screening process for other sites and it is recommended that it should be used in this analysis.

COMMENT: The statistical approach suggested for comparison of on-site samples with background samples which involves using 2 times the mean detected background concentration is not a valid statistical method. On-site samples should be compared with the 99% upper prediction limit for off-site samples instead (USEPA. Office of Emergency and Remedial Response. *Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A) Interim Final*. December. EPA/540/1-89/002. Page 4-8).

RESPONSE: The 2X background rule has been typically used in Region II risk assessments for the past decade. It provides a way of determining whether chemicals are site related and whether the concentrations meet the requirements under CERCLA Section 104(a)(3)(A).

The Background Workgroup plans to issue new guidance in the near future on this issue. Discussions with the Chair of the Background Workgroup indicates that the Workgroup/guidance will recommend that background not be used as a screening criteria in the selection of Chemicals of Concern in baseline risk assessment but rather the site-related nature of the chemical will be addressed in the Risk Characterization. Based on this anticipated guidance, background will not be used in the selection of chemicals of concern for the site. The collected background data will be incorporated into the risk characterization section of the risk assessment in a qualitative manner for consideration by the risk manager. Evaluation of the collected background data will be used to determine the appropriate statistical tests.

5. Exposure Assessment

COMMENT: The PAR should explain how vapor emissions from soil will be modeled and air dispersion rates will be calculated.

RESPONSE: EPA will use an EPA approved model to evaluate this pathway using site specific conditions.

COMMENT: The PAR should explain how exposure to drinking water will be evaluated, i.e., tap water measurements vs. modeling, for both current and future use scenarios.

RESPONSE: The risk assessment will use the collected groundwater data in the calculation of the risks from ingestion. In addition, the risk assessment will use the Andelman as modified by Schaum model to evaluate the showering exposures.

COMMENT: The proposed approach for calculating exposure concentrations based on USEPA guidance in RAGS and *Calculating the Concentration Term* will likely give artificially high 95% UCLs. More recent USEPA guidance recommends use of the "bootstrap" method to calculate exposure point concentrations. (USEPA. Office of Research and Development. *The Lognormal Distribution in Environmental Applications*. December. EPA/600/R-97/006.)

RESPONSE: The USEPA guidance on Calculating the Concentration Term will be used for evaluating datasets with normal and log normal distributions. In those cases where the data is neither normally or log normally distributed, EPA will contact Statistical Support services at EPA's laboratories in Las Vegas to determine the appropriate statistical tests to be used in the analysis. Defaulting to bootstrap without first evaluating the dataset is premature.

6. Risk Characterization

COMMENT: MCLs should be used in the risk assessment for assessing residential use of drinking water, rather than calculating the risk from drinking water; use of the MCLs is consistent with the specifications of the NCP.

RESPONSE: The role of the baseline risk assessment is to calculate cancer risks and non-cancer hazards to reflect the total risks and hazards from the sites. Use of the MCL is not appropriate as part of the baseline risk assessment since it does not provide adequate information on inhalation of volatile organic chemicals, calculated risks for children and adults, and a basis for comparisons. In addition, the MCLs incorporates decisions regarding engineering/best available technology that are risk management decisions, and outside the goals of the baseline risk assessment. Therefore, use of the MCLs in the baseline risk assessment is not appropriate at this time.

COMMENT: The risk characterization step should clarify that, based on the choice of exposure factors, the receptors are separate groups.

RESPONSE:

The risk characterization will provide adequate information regarding all steps in the risk assessment and the uncertainties associated with these assumptions consistent with the Agency's policies/guidance on risk characterization.

COMMENT: The PAR should be modified to specify that hazard indices (HIs) cannot be summed across age groups or receptors.

RESPONSE: The Hazard Indices will be summed across all appropriate age groups and routes of exposure based on the same bodyweights.

COMMENT: The PAR should allow for quantitative uncertainty analysis in addition to the qualitative evaluation specified in Section 7 of the PAR. For example, Monte Carlo simulations could be performed to assess the uncertainty associated with the point risk estimates.

RESPONSE: At this time, EPA does not plan to conduct a Monte Carlo analysis for the site. EPA Region II's experience conducting a Monte Carlo Analysis at another site, was that a quantitative assessment of uncertainty was not possible i.e., 2 dimensional Monte Carlo Analysis. This was a site where significant site-related data was available and the result of the enhanced 1 dimensional Monte Carlo Analysis were consistent with the results from the results from the point estimate. Considering the additional time, workplans, collection of data, etc. necessary to conduct the Monte Carlo Analysis, it is anticipated that this activity will significantly delay the current time necessary to conduct the risk assessment. Based on these factors, EPA does not plan to conduct a Monte Carlo Analysis at this time.